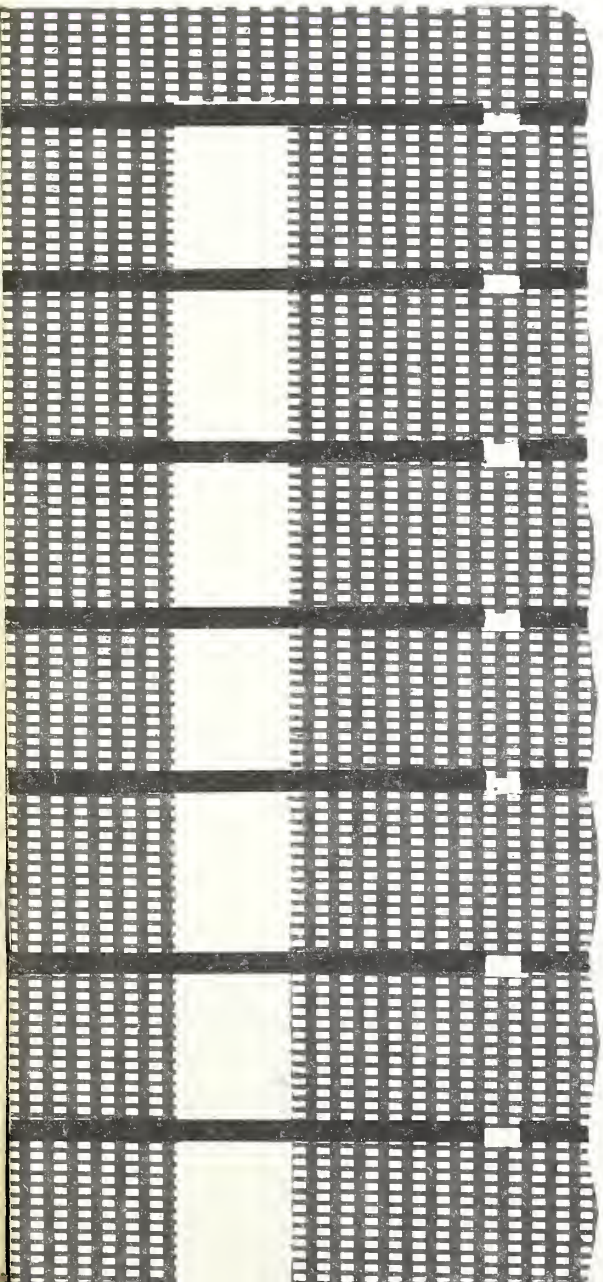
The AMERICAN COTTON BALE PACKAGE and Our Foreign Markets



A Summary Report

AMS - 386

U. S. DEPARTMENT OF AGRICULTURE
Agricultural Marketing Service
Marketing Economics Research Division
and Foreign Agricultural Service
Cotton Division

PREFACE

This summary report contains the major findings of an extensive study relating to the shortcomings of the U. S. cotton bale package as received in the major foreign markets. It includes information on the causes and effects of these shortcomings and on possible means of reducing or eliminating them.

The cooperation of many foreign and domestic firms and associations in providing information, and the assistance of the National Cotton Council of America, the Cotton Council International, and the agricultural attaches and other officials of U. S. embassies and consulates in foreign countries in collecting information are gratefully acknowledged. This is a cooperative study and joint report of the Agricultural Marketing Service and the Foreign Agricultural Service.

Special credit is due Shelby H. Holder, Jr., Marketing Economics Research Division, AMS, for his assistance in planning and conducting the tabulation and analyses of the large volume of data obtained from foreign spinners and dealers.

Travel expenses involved in the study were provided largely by FAS from funds accrued through the sale of surplus agricultural products under Public Law 480.

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HIGHLIGHTS AND RECOMMENDATIONS

Overall Costs and Considerations.--Extra estimated costs attributed to deficiencies in the bale package and surface condition of exported U. S. cotton total about 78 cents per bale. In addition, there are other important effects which cannot now be measured. Some of the more significant of these are the effects, on foreign spinners' processing efficiencies and product qualities, of surface contaminants not removed in preprocess cleaning. But most important are the overall effects of the extra costs--estimated and unestimated--along with related factors, on exports and prices of U. S. cotton.

It is particularly significant in this connection that, because of lower consumer purchasing power abroad than in this country and the greater competition confronting U. S. cotton, any extra costs to foreign spinners would normally have a greater effect on American cotton than an equal increase in costs to domestic spinners.

Insurance Claims.--Damage claims attributed to surface condition were paid on 12 percent of all U. S. export bales insured by three major domestic insurance companies in 1957-58. The percentage for each major export market for this cotton ranged from 2 percent for England to 25 for India and 58 for Japan. "Country damage"--a broad, inclusive term--accounted for 69 percent of the total claim costs, and carbon black for 13 percent.

The claim costs on cotton exported to all markets that year averaged $1.76 per "claim bale" (bales on which claims were paid) and 21 cents per bale insured. The average claim costs per bale for all bales insured were highest for cotton going to Japan (68 cents) and India (46 cents), even though the cost per claim bale was comparatively low.

Test Shipments.--Tucking of the covers on heads of U. S. bales under the end bands, which apparently had no significant effect on compressing efficiency, resulted in reasonably good covering on a much higher proportion of the heads of bales on arrival at foreign ports and mills than when the heads were sewed. Bales with the heads sewed accounted for nearly three-fourths of the marked increase in proportions of bale heads contaminated while in transit from domestic locations to foreign ports.

The use of patches greatly reduced the number of exposed sample holes, improved the bale appearance, and reduced the opportunity for pilferage and surface contamination. Approximately 96 percent of the unpatched sides checked had one or more exposed sample holes, compared with 40 percent for the sides with patches.

Other Bales Checked.--Checks at foreign port and mill warehouses indicated that the proportion of bale heads of foreign-grown cottons which were 75 to 100 percent covered was three-fifths greater than for U. S. bales. The percentage of sides with one or more exposed sample holes was about a third greater for American bales than other growths.

Port Practices.--For the most part, port practices and operations do not appear either to affect the bale package more than a comparable amount of

handling at other locations or to affect U. S. bales appreciably more than most other growths. The exceptions are that, at most foreign ports visited, one or two bands are removed from U. S. bales before the samples are drawn, and a higher percentage of U. S. bales are sampled than of some other growths.

Foreign Dealers and Controllers.--Claims and serious complaints because of the bale package and surface conditions were made by cooperating dealers on 24 percent of all U. S. bales and 21 percent of other bales handled by these dealers in 1957-58. Eight percent of the dealers indicated a willingness to pay a premium ranging up to 1 percent for special shipments of U. S. bales highly uniform in shape and completely covered with good bagging.

Better and more closely woven bagging, more completely covered heads and sides, and clearer markings were frequent suggestions of overseas dealers and controllers for improving the U. S. bale.

Foreign Spinners.--Seventy-six percent of the mills contacted did at least some surface cleaning of U. S. bales, compared with 63 percent for other growths; and a much larger proportion picked varying amounts of both U. S. and other cotton from the bagging after it was removed. The estimated cost of these two operations in cooperating mills, including loss in value of cotton involved, was about 30 cents per U. S. bale cleaned and 22 cents per U. S. bale consumed. Corresponding estimates for foreign cotton are 17 and 11 cents. It is highly significant, especially for the mills where these costs are highest, that some foreign growths and all manmade fibers involve little or no such costs.

Of the 22-cent preprocessing cost per U. S. bale consumed, 15 cents is associated with picking the covers. Separate estimates from a few mills indicate the picking cost is twice as large for U. S. bales covered with open-mesh jute as for those with sugar-bag type of cloth.

Recommendations.--It is strongly recommended that further concerted efforts be made to improve U. S. export bales. Five things which should be given immediate attention are: (a) Keep bale heads covered by using an adequate length of bagging and tucking the ends under the outer bands each time the bale is pressed; (b) use close-weave bagging on all bales, (c) patch both sides of all bales sampled three or more times prior to high-density compression, (d) review each operation and take additional appropriate precautions in sampling, handling, storing, and transporting U. S. bales to prevent surface contamination and damage, and (e) explore the possibility of bringing about improvements in the method of sampling U. S. cotton in foreign ports.

THE AMERICAN COTTON BALE PACKAGE AND OUR FOREIGN MARKETS

A Summary Report

by Maurice R. Cooper and R. Herschel McRae 1/

THE SITUATION RESPONSIBLE FOR THIS STUDY

For many years, bales of U. S. cotton have had the reputation, in both domestic and export markets, of being poorly packaged. The wrapping material used and the way it is applied, faulty or improperly applied bands and buckles, multiple sampling, and other handling practices often resulted in lint contamination, weather damage, fire losses, and misshaped, ragged, and unattractive bales. These shortcomings of the U. S. bale package are frequently said to be responsible for sizable economic losses and to be detrimental to the sale of cotton in export trade.

In recent years, an improved bale package has become even more important as larger quantities and a greater range of types and qualities of manmade fibers have become available, and as labor and other cotton processing costs have risen and competition from foreign cotton has increased. As a result, the U. S. industry has shown greater interest in correcting the packaging deficiencies of its raw cotton. The cotton industry and the current and prospective suppliers of cotton bale covers have conducted considerable research on new and improved bale wrapping materials and methods, and on how well these materials perform under commercial handling practices. The studies showed, in general, that the materials and practices which showed the most promise would mean either additional costs or a relocation of costs within the industry. It was obvious, therefore, that more accurate information was needed on the nature and extent of the costs associated with the existing package and surface conditions of the bale.

Industry representatives recommended that the U. S. Department of Agriculture undertake a study of the effects and costs of current cotton bale packaging and related practices on U. S. spinners. This study was made and the results were released in July 1958. 2/ Before the U. S. study was completed, industry representatives recommended that a somewhat similar study be made of the situation in the important export markets for U. S. cotton.

1/ Mr. Cooper is an agricultural economist in the Marketing Economics Research Division of AMS and Mr. McRae is a marketing specialist with the National Cotton Council who served as cooperative agent of the Cotton Division of FAS during this study.

2/ Lafferty, D. G., and Cooper, Maurice R., "Preprocessing Practices and Costs of United States Textile Mills as Affected by the Cotton Bale Package." U. S. Dept. Agr., Agr. Mktg. Serv., Mktg. Res. Rpt. No. 253. July 1958.

OBJECTIVES, SCOPE, AND METHODS

The study of the American cotton bale package problem in overseas markets was designed to provide factual information on which the U. S. cotton industry can make realistic decisions regarding the nature and extent of improvements needed. Specifically, the study was concerned with four main objectives: (1) The condition of the package and of the surface of U. S. cotton bales, as delivered to foreign ports and foreign spinners, and how they compare with those of cotton from other countries; (2) the resulting economic effects and costs of the deficiencies in bales from the United States and how they compare with those of other growths; (3) how much of the unsatisfactory conditions and economic losses occur before the bales are loaded on board ship in U. S. ports and how much in transit to the foreign ports and mills, and some of the marketing practices related to bale conditions at these locations; and (4) indications of some practical means of eliminating or reducing the deficiencies of the U. S. bale package.

Information was obtained from foreign spinners, overseas importers, marine insurance companies, and controllers representing U. S. shippers in foreign ports on the practices and costs relating to the package and surface condition of U. S. and other cotton bales. This required observations in U. S. compresses and port warehouses on U. S. bales, and in foreign ports and mill warehouses on both U. S. and other growths. The fieldwork on the study involved visits by the project leaders to eight countries of western Europe--England, Germany, France, Italy, Belgium, Holland, Spain, and Switzerland--and to India, Hong Kong, and Japan. In all instances, much of the work of collecting information was done in cooperation with, and in some instances by, cotton trade associations in the several countries.

Some of the individuals and firms asked that the information supplied be used so as to avoid revealing the identity of the country as well as the company. Consequently, all such identification is omitted except for the marine insurance claims data, which are given for six important cotton importing countries.

Usable information was obtained from 285 individual firms, plants, or branch offices in 7 countries of Europe and in India, Hong Kong, and Japan, plus overall estimates by association officials for all cotton spinning plants in one other European country. The information received from individual establishments represented 196 cotton spinning firms or plants, 77 cotton merchants or dealers, and 12 cotton controllers and insurance firms, including 3 U. S. insurance firms. Some spinners and dealers, however, furnished only a part of the data requested.

In addition to the rather large volume of statistics and other information referred to, data were obtained on handling practices at a number of foreign and domestic ports, and bale package and surface condition checks were made on 7 control lot shipments of U. S. cotton, involving 1,300 bales, and on hundreds of other bales produced in the U. S. and numerous foreign countries. These checks were made in 20 foreign mill or port warehouses and in 10 domestic interior and port warehouses.

MARINE INSURANCE CLAIMS ON U. S. COTTON

In recent years, the claims paid and the marine insurance premium rates on U. S. export cotton have increased considerably, especially for cotton going to some individual countries. As a result, this was one of the first aspects of the study to receive attention.

Claim records were obtained from 3 major insurance companies underwriting U. S. exports of 2,379,000 bales during the 2 years ended July 31, 1958. They included only claims paid which were related to the surface condition of the bales. Separate data were recorded for six major importing countries covered by the insurance of these companies-- Japan, England, Germany, Italy, India, and Belgium-- with the remainder included under "other" countries. Separate tabulations also were made for four categories of damage. The costs tabulated included administrative expenses associated with each claim paid, as well as the amount of the actual claim. The most significant facts shown by these data are:

1. The average proportion of all the insured bales for which claims were paid increased from nearly 10 percent in 1956-57 to 12 percent in 1957-58. The percentages for India were highest (29 and 25) and Japan (30 and 58), both of which were much higher than for the other major countries (1 to 8).

2. In terms of claim costs per bale shipped, the overall average was 14 cents in 1956-57 and 21 cents in 1957-58. The average cost per "claim bale" was $1.48 in 1956-57 and $1.76 in 1957-58. In view of the high proportion of claim bales, the costs per bale shipped were higher for the two seasons for India (50 and 46 cents) and Japan (35 and 68 cents) than for the other major importers of U. S. cotton. However, the costs per claim bale were generally the smallest for these two countries. The largest increases from 1956-57 to 1957-58 in the costs per claim bale were for "other countries," which went from $1.95 to $6.17, and Germany, which increased from $1.75 to $5.29.

3. "Country damage," a broad, rather loosely interpreted term (presumably covering damages occurring mainly in the country of origin from exposure to weather or from storing bales on damp ground or floors) was listed as accounting for a major part of all claim costs. It accounted for 79 percent of the total in 1956-67 and 69 percent in 1957-58. Carbon black contamination was listed as responsible for 20 and 13 percent, respectively, of the total claim costs in these two seasons. Oil, grease, and tar combined accounted for less than 1 percent of the total in both years and "other" causes jumped from 1 percent in 1956-57 to 18 percent in 1957-58. In England, Germany, and "other" countries, the "other" causes category increased greatly in 1957-58 and accounted for 49 to 59 percent of the costs of all claims that season. The main specific causes in the "other" category include contaminations from powdery substances other than carbon black.

TEST SHIPMENTS

The test-shipment phase of this study was designed to indicate the main changes occurring in U. S. bale package conditions at different points in moving the cotton from domestic compresses and ports to foreign ports and mills, and the nature and extent to which these changes may be affected by the packaging practices used. These shipments included six 200-bale lots and one 100-bale lot. For six of the lots, each composed of four sublots of approximately equal size, the bales in each sublot were packaged at the compress as follows: (1) The bagging was sewed over the heads or ends of each bale, and a patch or marker strip was placed on one of the two sampled sides, (2) the same as (1), except that a patch was added to both sample sides, (3) the bagging was tucked under the end ties and one patch added as in (1), and (4) the same as (3), except that two patches were added as in (2). Most U. S. export bales are usually prepared as in sublot No. 1-- with "sewed heads" and a patch on one side. A relatively small proportion have "tucked heads" with one and at times two of the sample sides covered, or partially covered, with a patch. The seventh lot was composed of bales some of which were compressed to high density at the gin and some at regular compresses, and it included bales covered with sugar-bag cloth, open-mesh jute, and two new types of more closely woven jute materials.

The bales in each of the seven lots were checked at domestic compresses or ports after being pressed to high density, and again in the transit shed at the foreign port. Some of the lots also were checked as they were being loaded aboard ships at domestic ports, and at foreign mill warehouses. Not all of the lots were checked at mill points, because of indefinite and constantly changing ship schedules and varying intervals between the time of their unloading at foreign ports and their shipment on to the mills.

The most significant findings from this phase of the study are:

1. In the checks made at domestic compresses, 2 percent of the flat sides of the bales were classed as 75 to 100 percent covered, 48 percent as 25 to 75 percent covered, and 50 percent as under 25 percent covered.

2. Of those sides of the bales to which patches had been added, 60 percent had no exposed sample holes at domestic compresses or ports, 39 percent had one or two holes, and only 1 percent had three or more. Where no patches were added, only 4 percent had no exposed sample holes, 52 percent had one or two, and 44 percent three or more.

3. When the bagging was tucked under the end bands, the heads of the bales stayed covered much better during the movement to foreign ports than when the bagging was sewed. For example, when the bagging was tucked, the proportion of the heads classified as 75 to 100 percent covered dropped 37 percentage points (from 86 to 54 percent) between the domestic compresses and the foreign port transit sheds, whereas those with sewed heads dropped 51 percentage points (from 80 to 39 percent). Those heads in the "under 25 percent" covered bracket increased 16-fold (from 2 to 32 percent) when the heads were sewed, compared with a threefold increase (from 4 to 12 percent) when the heads were tucked. It is significant that some of the compress crews tucked only the bottom pattern, or half, of the bagging under the bands, with the top

pattern tucked into the fold of the bottom pattern. Had both patterns been tucked under the bands, it is reasonable to expect that the in-transit handling operations would have caused a smaller change in the condition of the heads.

4. The proportion of misshaped bales increased from 1 percent at domestic compresses to 4 percent at foreign ports and those with one or more missing bands rose from 2 percent to 12 percent. However, a good proportion of the latter were in no worse condition than when two ties were removed later for sampling, as is usually done in a number of important foreign ports.

5. Overall changes in the proportions of the bales classed as having surface contamination upon delivery to transit sheds in foreign ports, compared with proportions at domestic compresses, were relatively small. The most significant overall change was in the proportion of all types of contaminated bale heads, which more than doubled. About three-fourths of this increase was accounted for by those heads on which the bagging had been sewed rather than tucked.

6. The few gin-pressed high-density bales included arrived in much better condition than the regular compress bales.

7. Decisions of buyers whether or not to file damage claims were said to be determined by conditions of the heads more than by anything else, mainly because it is the point where (a) serious country damage from open storage usually occurs, and (b) contaminants penetrate to a greater depth.

8. In some instances, the use of light patches and subsequent splitting, improper application of patches, and smearing of stencil ink made marks illegible.

CONDITION OF OTHER BALES CHECKED

In addition to the test shipments, hundreds of additional bales of cotton from the U. S. and 22 foreign countries were checked at foreign mill and port warehouses as to the condition of the bale heads and the number of exposed sample holes. However, no separate records were made for the U. S. bales according to the method of securing the heads or the number of patches applied.

Among these U. S. bales checked at foreign points, the proportion of the heads which were reasonably well covered (in the 75 to 100 percent bracket) was less than the proportion in the test shipments in which the bagging over the heads was tucked, but greater than that where it was sewed. Also the proportion of the sides with no exposed sample holes was smaller than for the patched sides of the test shipments, but larger than for the unpatched sides of the test shipments.

One of the most significant aspects of these checks is the comparative condition of the U. S. cotton and that of other growths. With few exceptions, the

various foreign growths had, on the average, fewer sample holes per bale and a larger proportion of the heads covered than did the U. S. bales. Most of the foreign-grown bales reached the ports of Europe, India, Hong Kong, and Japan with no sample holes and were then cut only one time on one side before being delivered to the mills. At some ports, only 10 percent of the bales in each lot from India, Pakistan, Sudan, and some of the other countries are sampled. In most instances, all U. S. bales are sampled at the receiving port.

For all foreign growths combined, these checks showed that 70 percent of the heads were classed as 75 to 100 percent covered, compared with 44 percent for U. S. bales. Of the foreign cotton checked, 43 percent had no exposed sample holes in the sides, compared with 15 percent for U. S. cotton. Of the foreign cotton, 2 percent had 3 or more exposed sample holes, compared with 18 percent for the U. S. cotton checked.

One significant point is that, whereas the bales from some countries reach foreign mills in much better condition than U. S. bales, this is by no means true of all foreign growths.

PORT PRACTICES AS RELATED TO BALE PACKAGING AND SURFACE CONDITIONS

Practices both in domestic and foreign ports have a significant bearing on the surface condition of American cotton as it is delivered to foreign mills. Also, some of the least desirable features or conditions of the bale package have significant adverse effects upon the efficiency and cost of the port handling and storage operations. Consequently, considerable information was obtained on the practices in handling cotton at a number of U. S. ports and at foreign ports through which U. S. cotton moves, to provide a more definite indication of the nature and importance of these relationships. Most of this information was obtained in conjunction with the work on the control lot shipments and the spinner and dealer phases of the study.

The practices at domestic ports which appear to have the greatest adverse effects on the cotton bale package and surface condition are: (1) The inserting of hand hooks only into the bagging, particularly in the heads of bales, rather than through the bagging and on into the cotton, (2) skidding of bales on warehouse floors with lift trucks, either for quick stops or for positioning bales for pickup, and (3) putting bales on warehouse floors or into ship holds which have not been cleaned of residue from previous cargo. While the damage from these practices appears to be relatively small, the indications are that it could be reduced with relatively little effort or expense.

The main effects of poor package or surface condition of bales on the efficiency of domestic port handling and storage operations are: (1) The cost to the port or steamship companies of hiring inspectors to see that bales are in reasonably good condition before being loaded aboard ship, and (2) the cost to the shipper or compress for putting rejected bales in acceptable condition. Based on figures furnished by five U. S. ports, approximately 2 percent of all bales received during 1954-58 have been rejected for such causes as inadequate marks, missing bands, "spider" (or loose-ended) bands, low density, excess surface moisture, and surface contamination. The annual cost of maintaining the inspection service at these ports during the 5 years is estimated at 3 cents

per bale shipped. Cost to compresses or shippers for repairing or cleaning the bales rejected by port inspectors during this period is estimated at 2.5 cents per bale shipped.

Bales of U. S. cotton moving through most foreign ports are subjected to the following operations: Receiving, weighing, sampling, taring, storage, and shipment to the mill. Except for sampling and the removing and replacing of bands in the process, the bales from the U. S. and other countries moving through a given port are handled in about the same manner. The proportion of the bales sampled, however, varies from zero to 100 percent, depending upon the port and the origin of the cotton. The range for sampling U. S. cotton in the 10 foreign ports covered in this study is usually from 10 to 100 percent. In seven of these ports, the usual practice is to sample all U. S. bales. In six of the ports, two samples were drawn from an estimated 80 to 100 percent of the U. S. bales, and at five of them, three samples were taken from 10 to 100 percent of the bales from this country. At all these ports, the usual practice is to pull the one to three samples from a single hole without cutting into the bale. The sampling practices for other growths were reported as being about the same as for U. S. cotton at most of these ports, except for Indian, Pakistani, and Sudanese, which are usually sampled on a 10 percent basis; and Russian cotton, which is most often not sampled at all.

At nine of these foreign ports, either one or two bands were generally removed from U. S. bales before sampling, and at five of them, the usual procedure was to remove two. The bands from U. S. bales were replaced at only one port before the bales were shipped on to the mills, whereas at least at five ports, bands from some foreign growths were replaced. The difference was due in part to the fact that some bales of foreign cotton have only three bands and a few have only one, both types running spirally around the bales.

In 9 of the 10 ports, the usual practice is to check the tare (bagging and ties) weight on 2 to 5 percent of the U. S. bales, although the regulations permit the checking of 5 to 10 percent of these. At most of these ports, the bales are moved on to the mill with only three to five bands replaced. According to the controllers' reports, there is little difference in the proportions of U. S. and foreign bales which are checked for tare weights.

In the foreign ports, as in the U. S. ports, other commodities are handled through the same facilities as cotton, and many of the practices are similar to those in U. S. ports. Consequently, the practices at U. S. ports mentioned above also adversely affect the cotton bale package as it moves through most foreign ports. Partly because of the additional operations involved, there are some other practices in overseas ports which contribute to the poor condition of U. S. bales upon delivery to foreign spinners. The additional practices of most significance to U. S. cotton are:

1. The large percentage of U. S. bales sampled and the methods of sampling, which necessitate the removal of one or two bands.

2. The taring of 2 to 5 percent of the U. S. bales in all but one of the ports, and the resulting poor condition of these bales when delivered to the mills.

3. The extra handling at some ports where, because of limited dock space, fumigation requirements, and other factors, the cotton is unloaded onto lighters or barges and then onto the docks.

4. The use of hooks rather than slings in unloading, with their adverse effects on the bagging and the bands, particularly when they are hooked into the bagging or under the bands (as is frequently done at some ports) instead of into the cotton.

5. The marking of weights on the bales with ink, which often results in ink stains on the cotton.

As in the case of the operations at U. S. ports, there are certain shortcomings of the bale package which affect the efficiency and costs of moving U. S. cotton through foreign ports. The most significant of these appear to be:

1. Misshaped bales, due to loose or broken bands and ragged or loose bagging, which, at times, require extra labor, equipment, or space for handling and storing or for correcting the defects.

2. Variations between bales and lots in the weight of the bagging and ties, which result in extra labor and expense to check the tare weight on 2 to 5 percent and, in some ports, 10 percent of the bales in each lot.

Another aspect of U. S. and other bales which, with existing sampling methods, affects foreign port handling costs and efficiencies is the narrow space between the bands. This and the practice of pulling one to three samples from one hole without cutting into the bale usually cause the removal of two bands from each bale before the samples are pulled and, in one port, the added expense of replacing these bands before the bales are shipped to mills. At one port, where the bands are not replaced, the salvage value of these bands was so low in the spring of 1959 that the dock officials were concerned about the labor and expense involved in disposing of them.

Although little information was obtained from which to estimate these extra costs at foreign ports, the indications are that, in terms of the average of all U. S. cotton exported, such costs would be no more than a few cents per bale.

The leading controllers in the foreign ports mentioned what they considered to be strong and weak points of the U. S. bale package. The three strong points listed and the proportions of controllers mentioning each were: Good band strength, 78 percent; high density, 44 percent; and good markings, 11 percent. The most frequently mentioned weak points and the percentage of mentions were: Weak and open-weave bagging, 100 percent; uncovered sides or heads and exposed cotton, 78 percent; ineffective sewing of heads, 11 percent; and excessive sampling, 11 percent.

INFORMATION FROM OVERSEAS DEALERS

Information was obtained from cotton merchants and selling agents in 7 foreign countries, including data from 19 firms in one country which supplied

only the percentage of their volume which was U. S. and the percentage which was other cotton, without giving actual quantities. The 1957-58 imports of the firms in those 6 countries giving volume data totaled over 3,185,000 bales, including 1,376,000 bales from the United States, and accounted for almost half of the 6 1/2 million bales imported from all sources by the 6 countries. The information from merchants and dealers was largely concerned with (1) the nature and extent of the claims and complaints made because of the package or bale surface condition of U. S. and other cotton, (2) which countries delivered the best and which the poorest packaged cotton, and (3) suggestions for improving U. S. bales.

Analyses of this information show the following:

1. A little over one-fourth of these dealers reported that they had filed claims or made serious complaints about U. S. or other bale packages or surface conditions, and others indicated that they had not because they felt there was little or nothing to be gained by doing so. Claims were reportedly made on the equivalent of 8 percent of the U. S. bales and 6 percent of the foreign cotton bales received by all firms giving volume data. The number of U. S. bales against which complaints were reported was equal to 16 percent of these bales imported by the reporting firms, compared with 15 percent of the bales from other countries.

2. The most frequently mentioned causes for claims and complaints, both for U. S. and other cotton, were country damage, rust stains, and "soiled" bales. Carbon black was another cause frequently mentioned in the case of U. S. cotton, and broken bands were mentioned frequently in the case of other growths.

3. Almost two-thirds of the responding dealers indicated the belief that the package and surface condition of U. S. bales did not affect the quantity of cotton they were able to sell in 1957-58. Even among those indicating a belief that these factors did affect sales, none reported this as having more than a small effect.

4. Of the countries listed by dealers as providing the best-packaged cotton, Uganda, Egypt, Sudan, and Russia were mentioned most often. As those having the poorest packages, the U. S., India, Iran, and Pakistan were named most often. In this listing, the U. S. was included 61 percent of the time, compared with 9 percent or less for the other individual countries.

5. The suggestions made most often by dealers for improving the bale package for U. S. cotton were: Better and more closely woven bagging, better quality ties, bagging and ties of standardized or more uniform weight, and more clearly marked bales. About 8 percent of the respondents reported a willingness to pay price premiums ranging up to 1 percent for special shipments of U. S. cotton bales highly uniform in shape and completely covered with the best grade of uncut and untorn bagging.

EFFECTS OF BALE PACKAGES AND SURFACE CONDITIONS ON FOREIGN SPINNERS

Information from cotton spinners was obtained through both mail questionnaires and personal interviews. The latter usually included on-the-spot observations and discussions with mill workers, as well as administrative officials. The 196 individual spinning plants or firms providing information which was at least reasonably complete accounted for a total reported consumption of over 1 million bales of all cotton. Of this, a little over 50 percent was U. S. cotton, the remainder including cotton from more than 20 other producing countries. Consumption per firm or plant ranged from less than 1,000 to approximately 40,000 bales during their reporting year. All but 16 of the reporting mills consumed both U. S. and other cotton, the U. S. cotton representing from about 2 to over 97 percent of their totals.

This phase of the study was designed primarily to indicate, both for U. S. and other cotton, (1) the effects of the bale package and bale surface conditions on foreign spinners' preprocessing practices and costs in 1957-58, and (2) the type and relative importance of the bale surface contaminants most frequently encountered. The mills were asked also about any recent checks they had made of defects in yarns and fabrics which were attributed to bale surface contamination.

The most important estimates and conclusions made from the information supplied by foreign spinners are:

1. Approximately 76 percent of the mills using U. S. cotton reported doing at least some surface cleaning of the U. S. bales prior to processing, compared with 63 percent in the case of other growths. Of the total consumption by the reporting mills, about 57 percent of the U. S. bales and 42 percent of the bales from other countries were cleaned to at least some extent. In addition, nearly all the mills from which detailed cost estimates were obtained spent at least some time in picking cotton from the bagging after it was removed from both U. S. and foreign bales.

2. The estimated weighted average cost of the reporting mills for these two types of preprocessing, including labor and the loss in value of the cotton removed from the bale surfaces and the covers, plus that remaining with the partially picked covers, was about 30 cents per bale of U. S. cotton cleaned. The average of these costs per bale of U. S. cotton consumed by the reporting mills was 22 cents. Corresponding estimates for foreign cotton are 17 cents per bale cleaned and 11 cents per bale consumed.

3. Of these preprocessing costs per U. S. bale consumed, 7 cents represents those associated with cleaning the bale surfaces, and 15 cents those involved in picking of the bale covers. The total labor cost for these preprocessing practices is estimated at 8 cents per bale consumed, the remaining 14 cents representing the estimated loss in value of the cotton. Had the wages (in cents per hour) of opening-room workers in cooperating foreign mills equaled those of comparable workers in domestic mills, these labor costs would have been approxi-

mately 32 cents, and the labor and nonlabor costs combined about 46 cents per U. S. bale consumed.

4. Of the total of these estimated preprocessing costs per bale of foreign cotton consumed by cooperating mills, nearly 4 cents represents the estimated cost of cleaning bale surfaces, and about 8 cents the costs of cleaning the covers. The difference between the costs of picking the covers for U. S. and foreign cotton was mainly due to the type of bagging and the number of sample holes involved. A few mills furnished estimates indicating that the cost of picking open-weave jute covers from U. S. bales was approximately twice as much as for close-woven sugar bagging.

5. A number of mill officials indicated that, in contrast to the average U. S. bale, the bales of certain foreign growths, like those of all manmade fibers, consistently reached their mills in such condition that little or no surface cleaning or picking of bale covers is needed. Other factors being the same, U. S. cotton's position is weakest in competition with these alternative raw materials.

6. For the 25 percent of the survey mills that incurred the largest estimated costs in cleaning the bale surfaces and picking the bagging of U. S. cotton, these combined costs ranged from 39 to 86 cents per bale consumed. Other things being equal, the deficiencies of the U. S. bales would have their greatest effects on the purchases and consumption of these mills.

7. The most frequently mentioned types of bale surface contaminants, both for U. S. and other cotton, were rust spots, ink dye, weather stains, and hard fibers. The number of times these items were mentioned was much greater for U. S. than for other cotton.

8. Practically none of the mills reported having any specific information on the extent of the effects of bale surface contaminants and damage on their spinning and weaving efficiencies or on their yarn and fabric qualities. It was clearly indicated, however, that the reason for cleaning the bale surfaces prior to processing was to reduce or avoid such adverse effects. Some of the spinners expressed the view that these effects might be larger than any of the cost items for which they furnished information, despite the preventive efforts being made by the mills.

9. Officials and employees of mills processing many different growths, as well as controllers and forwarding agents, consistently expressed the view that in terms of shape, weight, and density, U. S. and similar bales are preferable. The principal reasons were that these bales made possible greater efficiencies in handling in and out of storage, and in preparing and laying down mixes. Favorable comments were made also regarding both the savings in storage space of the heavy--725- to 750-pound--Egyptian bales and the stacking and storing qualities of other foreign bales which are uniform in length and width. However, some complaints were heard about the difficulty of handling the heavy Egyptian and Spanish bales.

OVERALL COSTS AND OTHER CONSIDERATIONS

In the preceding sections of this report, estimates were given for the following extra costs or groups of costs, mainly as of 1957-58, attributed either largely or entirely to deficiencies in the U. S. cotton export bale package and surface conditions:

Item	Cost per bale 1/
	Cents
1. Patches added at domestic high-density compresses	30.0
2. Inspection services at domestic ports	3.0
3. Repairing and cleaning bales rejected by domestic port inspectors	2.5
4. Marine insurance claims 2/	21.0
5. Cleaning of bale surfaces at foreign mills 1/	7.0
6. Cotton picked from and remaining with bale covers at foreign mills 1/	15.0
Total of estimated items	78.5

1/ Rough approximation per bale exported except for items 5 and 6, which are per bale consumed by mills cooperating in the study.

2/ An undetermined amount of the insurance claims paid go directly or indirectly to foreign mills. This offsets at least a part of both the estimated and unestimated extra costs to these mills and to foreign consumers, resulting from bale deficiencies covered in this report.

There are some other such extra costs which have not been estimated, because of insufficient available information. It seems likely that the most important of these are the costs resulting, directly or indirectly, from the reduced spinning and weaving efficiencies and lower yarn and fabric qualities due to bale surface contaminants not removed in preprocess cleaning. Many of the mill officials feel that these may well be larger than any of the mills' other extra costs resulting from deficiencies of the U. S. bale package. Additional unestimated costs are those due to (1) pilferage and other loss of fiber from the sample bales and heads of bales while the cotton is moving from domestic compresses to foreign mills, (2) added labor and space for handling and storing bales which are ragged, misshaped, or exceptionally large or small, (3) extra labor in determining the amount of tare for each lot, and in removing and at times replacing bands for sampling up to 100 percent of the bales in each lot, and (4) added costs to foreign spinners because a part of the extra costs occurring in earlier stages of marketing, with any accompanying pyramiding, are passed on to the mills.

In addition to cost considerations as such, it should also be pointed out that a number of spinners, dealers, and others expressed the view that the unsightly U. S. bale package is having some unmeasured and possibly unmeasurable psychological effects of importance. Those commenting apparently believe that even where little or no specific information has been obtained by mill officials as to the actual costs involved, preference may be given to certain other growths because this cotton is normally delivered in a cleaner, less wasteful-appearing package. While this is an intangible and seemingly a relatively

small consideration, it is one which U. S. representatives interested in foreign markets for American cotton have repeatedly reported for a number of years.

The most important consideration, and one of the main reasons for studying various types of added costs resulting from bale deficiencies, is the extent to which such deficiencies affect exports, foreign consumption, and prices of U. S. cotton. From an overall standpoint, it is these effects which are the best guide as to how much the domestic industry should spend in improving the U. S. export bale. But, in view of the many factors involved, it is not possible, at this time at least, to provide such estimates. Consequently, the persons most directly concerned about improving the U. S. bale package will find it necessary, in reaching a decision on this, to make either consciously or unconsciously certain assumptions regarding some important undetermined effects of an existing practice compared with an alternative one under consideration. In view of the increasingly competitive situation confronting U. S. cotton in domestic and export markets, and the extra costs and efforts involved in regaining markets once they are lost, it seems preferable that any errors in estimating the harmful effects be on the high rather than the low side.

There are two other important factors which should be considered in evaluating the U. S. cotton bale package, either from the standpoint of its overall effects or in weighing the significance of the individual cost effects. The first of these is the marked differences in wages and purchasing power of workers and consumers in many foreign countries compared with those in the United States. The second is the difference in U. S. cotton's competitive position in this country and in most foreign countries, because various other cottons are more readily available and are generally used in those countries. This means that any addition to foreign spinners' and consumers' costs or prices would normally have more effect on their purchases, particularly of U. S. cotton, than would result from an equal increase in costs or prices to the United States mills.

POSSIBILITIES FOR IMPROVING EXPORT BALES

When industry leaders in foreign countries were first contacted about cooperating in this study, some of them asked, "Since the evidence is so clear that American cotton bale packaging is unsatisfactory and should, in the interests of all concerned, be improved, why does not the U. S. Government take steps to correct the situation?" It was also stated or implied that they could not see just how this study might bring about improvements in the U. S. cotton bale package, since the situation had been brought to the attention of industry and USDA representatives many times. A number of them mentioned this Department's 1896 publication, 3/ which strongly criticized the American cotton bale package, and the visits to European mills in the late 1930's of Fred Taylor of the USDA to investigate this and other complaints of spinners and merchants regarding American cotton.

In reply to these comments, it was indicated that this study and an earlier one concerning some of the bale deficiency costs to domestic mills 4/ not only

3/ U. S. Department of Agriculture. "The Cotton Plant." 1896.
4/ See footnote 2 on page 5.

were the first substantial efforts to measure the effects, but are a comparatively small part of developments in the last few years which seem likely to bring about some significant improvements in U. S. export bales.

In addition to the domestic industry's efforts for improvements through concerted action, other recent developments mentioned are:

1. The increase since 1954, and especially since 1958, in the proportion of the U. S. crop which is sampled mechanically during the ginning process, and the number of these bales which are or can be delivered to domestic mills and foreign ports without cutting any samples from the bales.

2. The increase in the last 2 or 3 years in the proportions of the U. S. export bales and of standard-density bales moving to domestic mills with the bagging tucked under the bands at the heads or ends of the bales, instead of sewed.

3. The increase in the last few years in the proportion of U. S. export bales to which patches have been added on both sample sides instead of one.

4. The recent commercial introduction and favorable test results of some new types of more closely woven bale covers for U. S. cotton.

5. Decreased open storage at gins and warehouses and greater care in keeping bales off the ground.

Despite these favorable developments and some gaps in the information relating to the problem, this study indicates that the shortcomings in the package and surface condition of U. S. export bales are detrimental to the competitive position of this cotton and that considerable further efforts should be made to reduce or eliminate at least some of these shortcomings. It appears, therefore, that any possibilities for significant improvements, without incurring appreciable increases in packaging or related costs, should get early attention.

One such change is the tucking of the bagging over the heads of the bales instead of sewing it, as is usually done. Observations made in connection with the test shipment phase of this study indicate that, after a little instruction and training, the compress crews could operate as fast or faster with this procedure as with the usual procedure. Also, the cost of compress time used in sewing heads could be eliminated.

A common suggestion of foreign spinner representatives, cotton controllers, dealers, and others is the use of closely woven fabric, such as sugar-bag cloth, in place of the open-weave or open-mesh jute. There is no doubt that the open-mesh jute cover is much less satisfactory from the spinner's standpoint and provides less protection from contaminants. Moreover, the fibers from the open-weave jute covering's coarse, low-twist yarns and short pieces of the unraveled yarns frequently contaminate the surface of the bales so much that some spinners consider this to be the most serious type of contaminant. Also, the

costs associated with the picking of this bagging, including loss in value of the resulting downgraded cotton and of the cotton still remaining in the picked bagging, are generally considered to be much greater than for sugar-bag cloth, possibly about twice as great. It is suspected that such costs for the new type of close-weave jute bagging will be more than for sugar-bag cloth but less than for open-mesh jute.

In view of the apparently decreasing supply of sugar-bag cloth, this suggested change would necessitate the use of the most promising of the new closely woven jute materials, which, under certain market conditions, may well cost slightly more than the standard open-weave jute.

A third change, which could be made rather easily and was suggested by several persons contacted in overseas markets, is to place patches on both sample sides of the bale. This would eliminate most, if not all, of the exposed sample holes, reduce this source of contamination and pilferage, and improve the general appearance of the bale. While the effect of these factors on the competitive position of U. S. cotton has not been determined, apparently the few larger domestic shippers following this practice feel the extra cost is justified. Currently the average cost of patching is estimated at 25 cents per patch.

The results of this study strongly suggest that these three changes would largely overcome what foreign spinners and others find to be some of the most serious shortcomings of the U. S. bale package. If to these could be added the elimination of all or most of the sample holes cut in each side of the bale while in domestic markets, extra efforts to reduce country damage and other sources of contamination, and some improvements in sampling practices in foreign ports, the U. S. bale package as received by foreign spinners would compare reasonably well with that of the most desirable packaged foreign cottons. These changes and the accompanying reduction in estimated and unestimated costs discussed in this report would definitely strengthen the competitive position of American cotton, in both domestic and export markets.